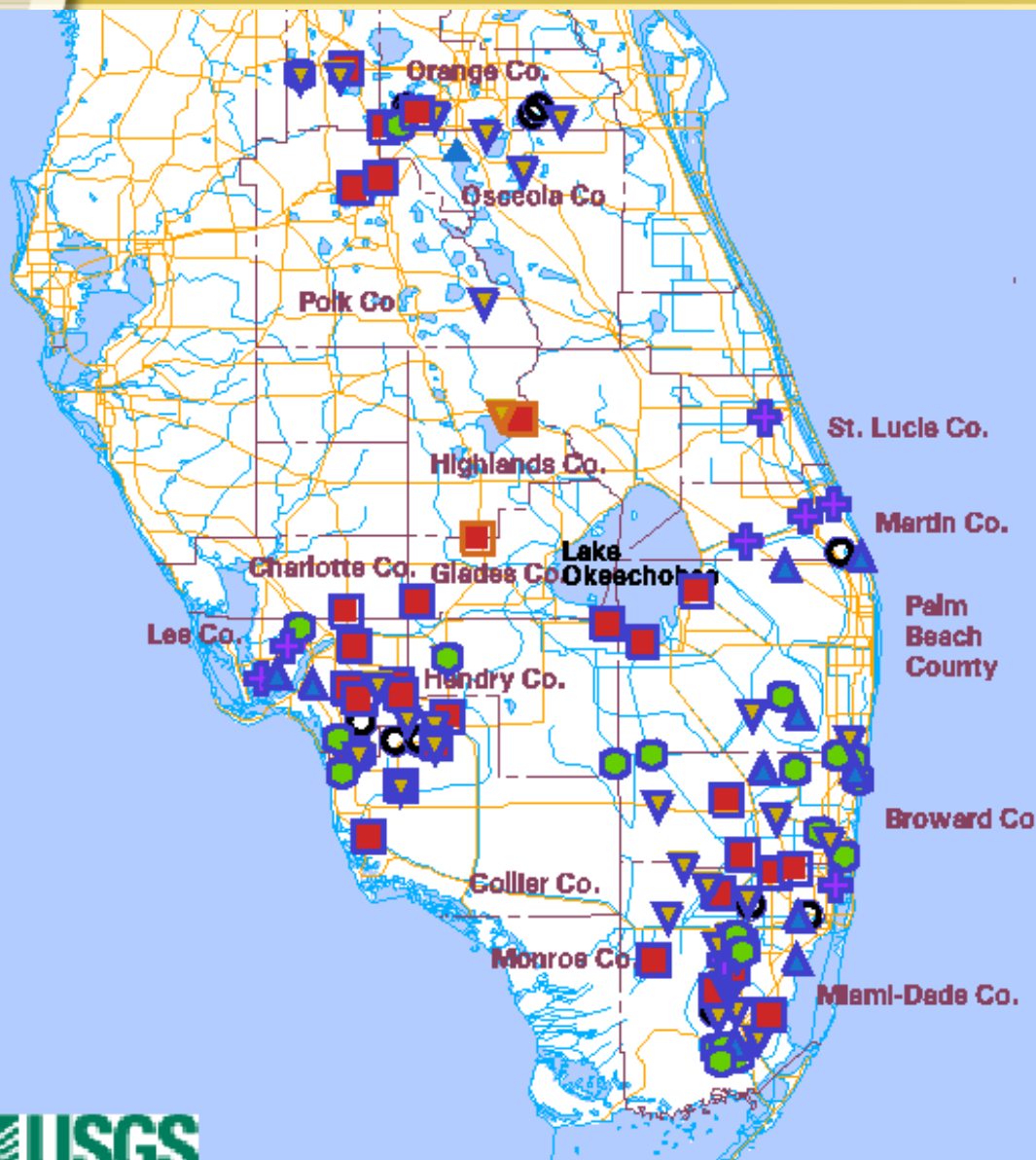








Water Shortage Emergency Update & Action Items #57 A & B



**Chip Merriam
Deputy Executive Director, Water Resources
South Florida Water Management District
December 13, 2007**

USGS Water Level Map, Dec. 10, 2007



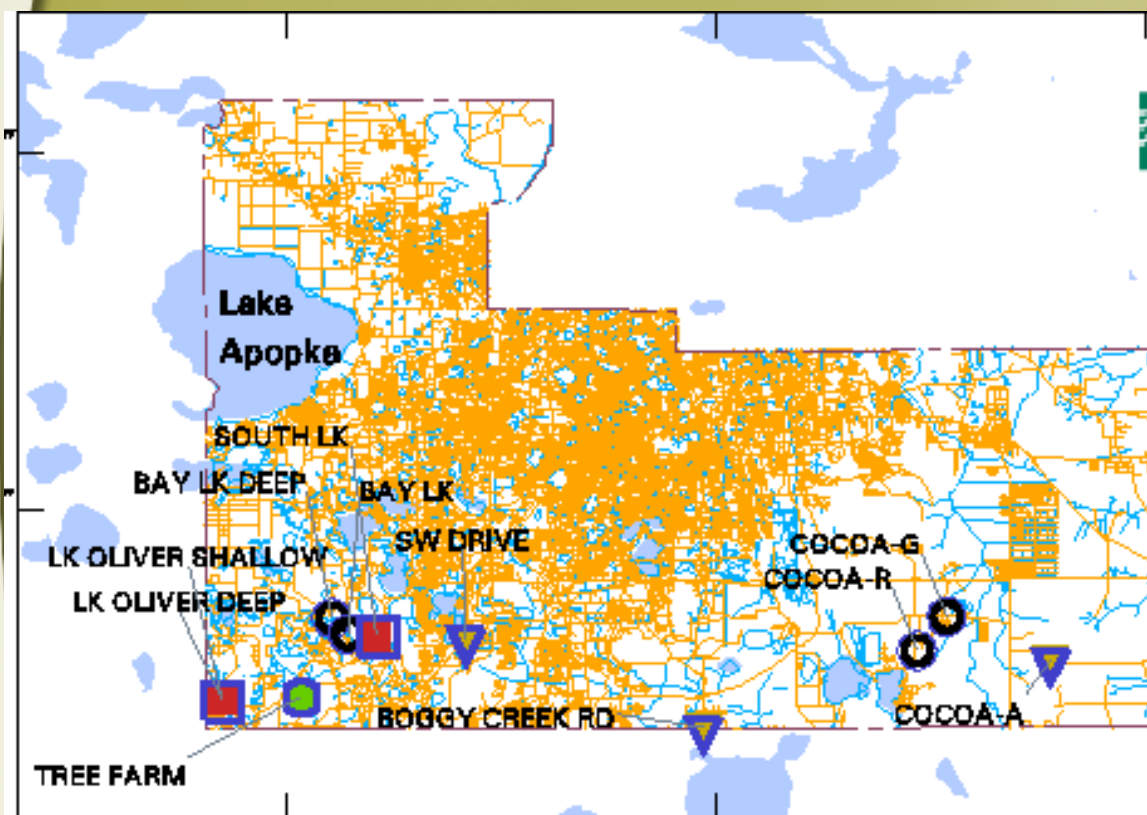
-  Insufficient data
-  Lowest 10% of past elevations
-  Lowest 10-30%
-  Within 20% of median
-  Highest 10-30%
-  Highest 10%

Outlook



- La Nina climate forecast indicates a drier-than-normal dry season
- Regional system beginning dry season with water levels lower than last year
- Some areas above-average water levels (e.g., Upper East Coast) and some have below-average conditions (Lower West Coast)
- All areas may experience rapid water level declines with drier-than-normal dry season
- Coastal areas prone to saltwater intrusion

Orange County Groundwater Map, Kissimmee Basin



0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS

- Insufficient data
- Lowest 10% of past elevations
- Lowest 10-30%
- Within 20% of median
- Highest 10-30%
- Highest 10%

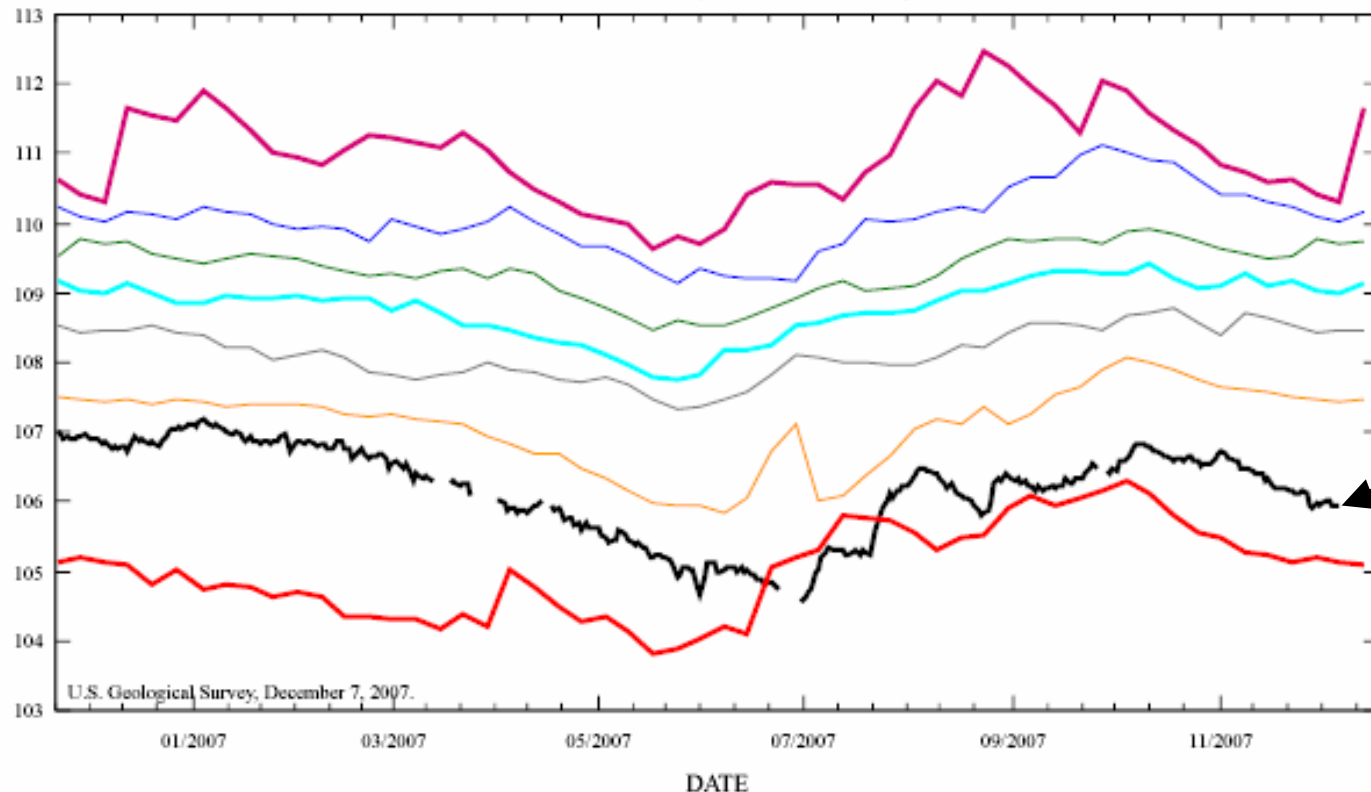
Hydrograph of Lake Oliver Deep Well, Floridan Aquifer, Orange County



Comparison of current water-level elevations to historical data at LK OLIVER DEEP (282202081384601)

PROVISIONAL DRAFT -- Subject to Revision.

Statistical measures are based on the last 25 years of PUBLISHED continuously-recorded data



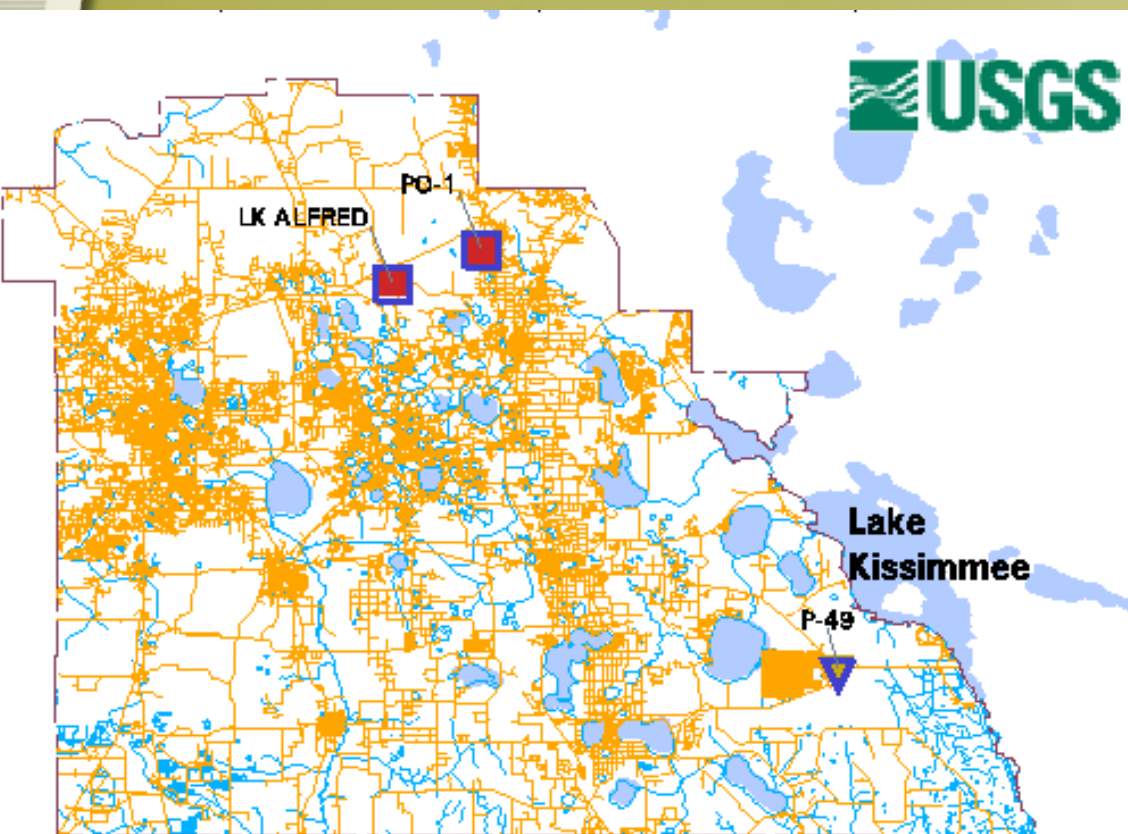
**Median
Water Levels**







**Current
Water Levels**

- Daily maximum water-level elevation
- Median (50th percentile) of detrended daily maximum water-level data
- 1st percentile of detrended daily maximum water-level data
- 10th percentile of detrended daily maximum water-level data
- 30th percentile of detrended daily maximum water-level data
- 70th percentile of detrended daily maximum water-level data
- 90th percentile of detrended daily maximum water-level data
- 99th percentile of detrended daily maximum water-level data

U.S. Geological Survey, December 7, 2007.

Polk County Groundwater Map, Kissimmee Basin



-  Insufficient data
-  Lowest 10% of past elevations
-  Lowest 10-30%
-  Within 20% of median
-  Highest 10-30%
-  Highest 10%

Hydrograph of Lake Alfred Well, Floridan Aquifer, Polk County

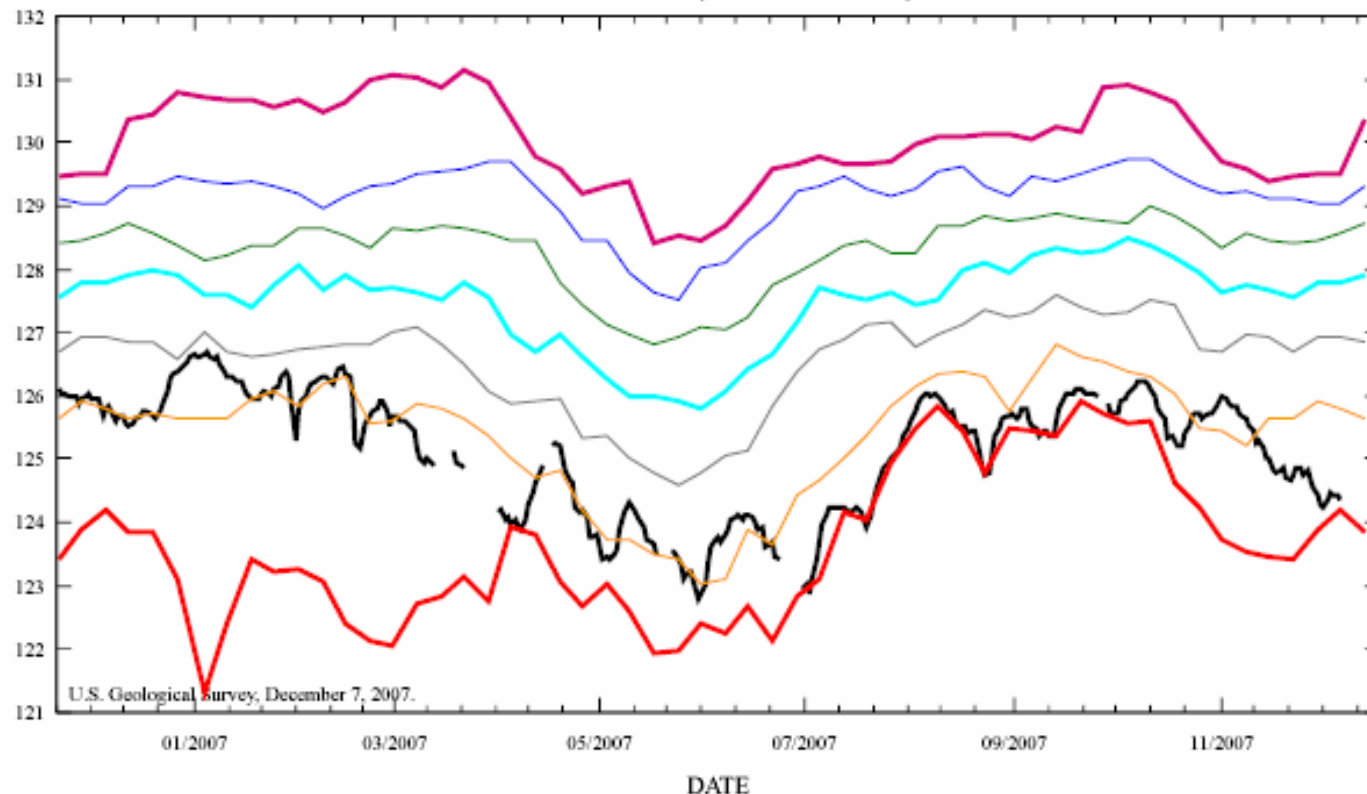


Comparison of current water-level elevations to historical data at LK ALFRED (281008081441801)

PROVISIONAL DRAFT -- Subject to Revision.

Statistical measures are based on the last 25 years of PUBLISHED continuously-recorded data

WATER-LEVEL ELEVATION, IN FEET ABOVE NGVD 1929



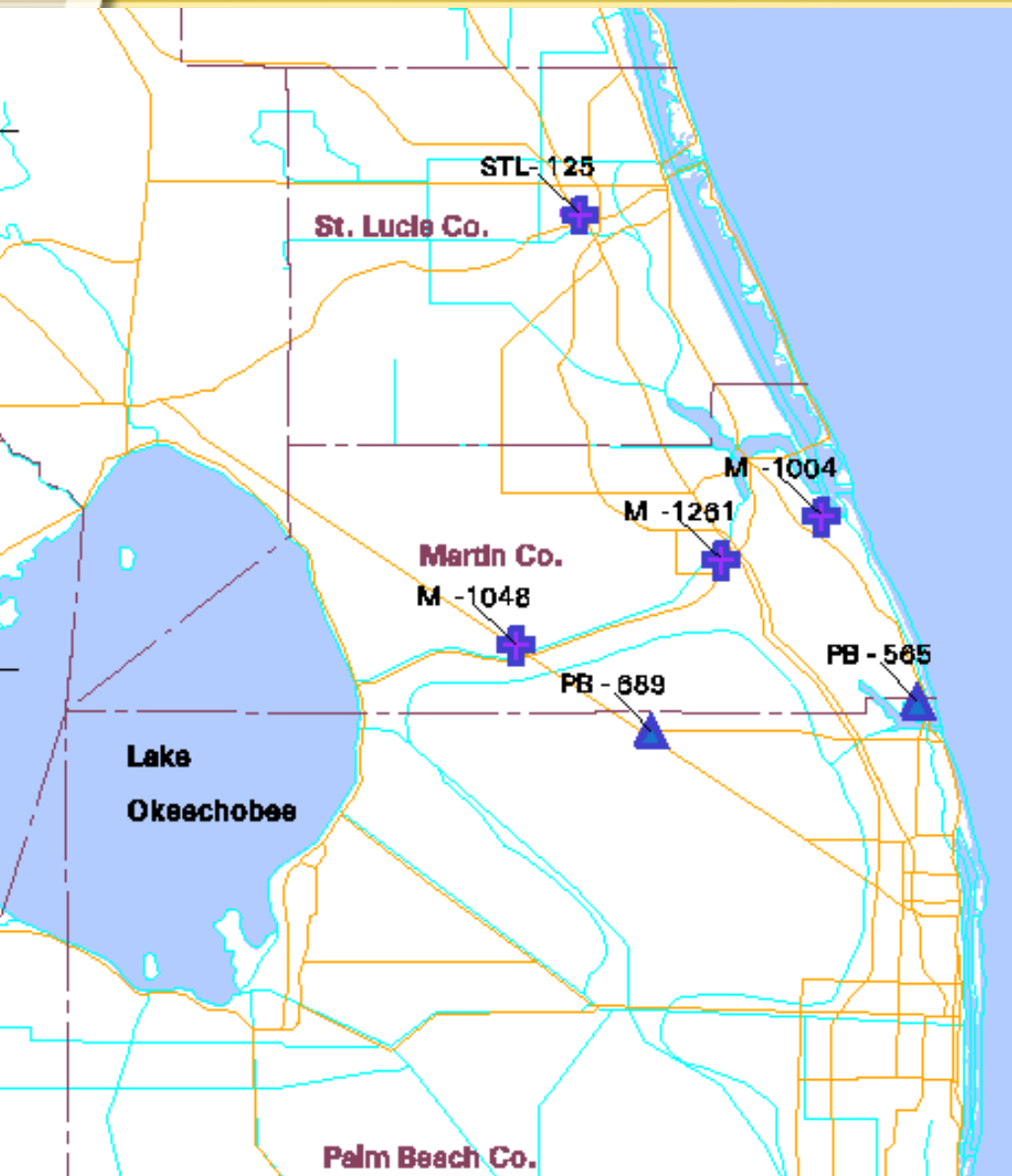
**Median
Water Levels**







**Current
Water Levels**

- Daily maximum water-level elevation
- Median (50th percentile) of detrended daily maximum water-level data
- 1st percentile of detrended daily maximum water-level data
- 10th percentile of detrended daily maximum water-level data
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- 70th percentile of detrended daily maximum water-level data
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- 99th percentile of detrended daily maximum water-level data

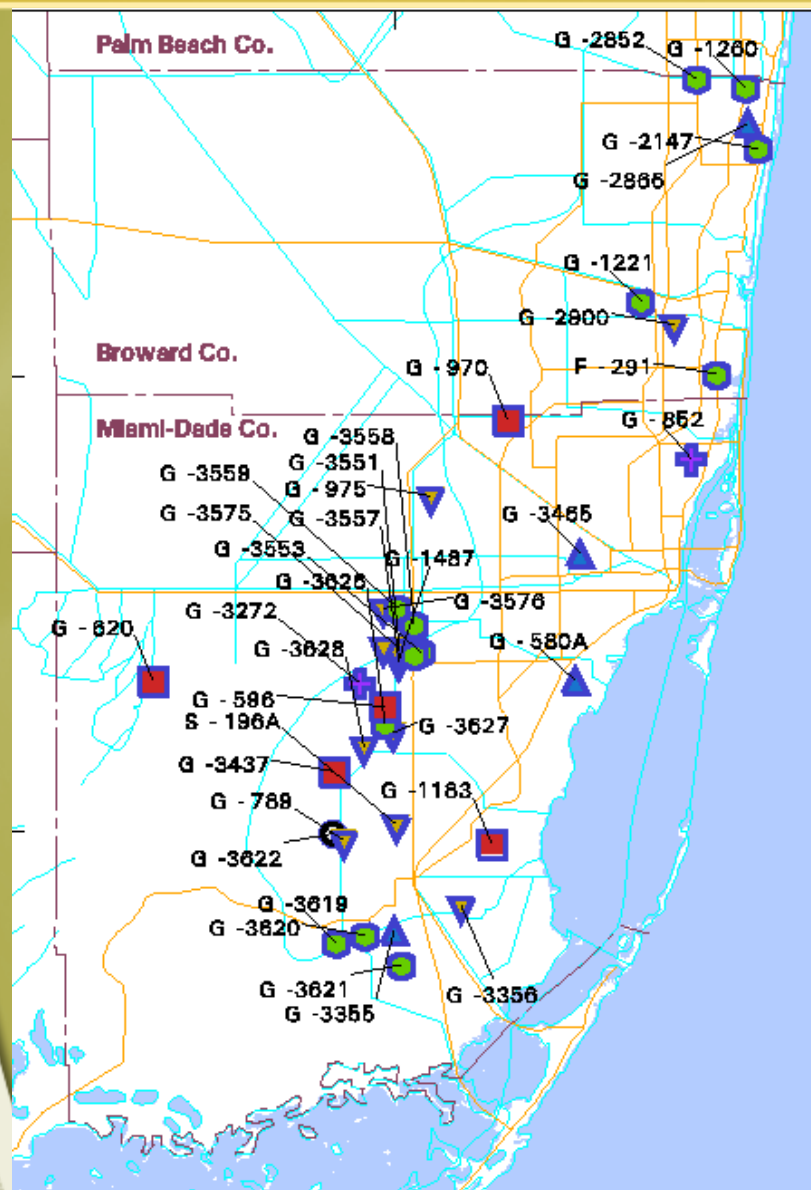
U.S. Geological Survey, December 7, 2007.






Upper East Coast Groundwater Map



-  Insufficient data
-  Lowest 10% of past elevations
-  Lowest 10-30%
-  Within 20% of median
-  Highest 10-30%
-  Highest 10%

Lower East Coast Groundwater Map



-  Insufficient data
-  Lowest 10% of past elevations
-  Lowest 10-30%
-  Within 20% of median
-  Highest 10-30%
-  Highest 10%

Hydrograph of S-76 Gauge, WCA-3B, Broward County

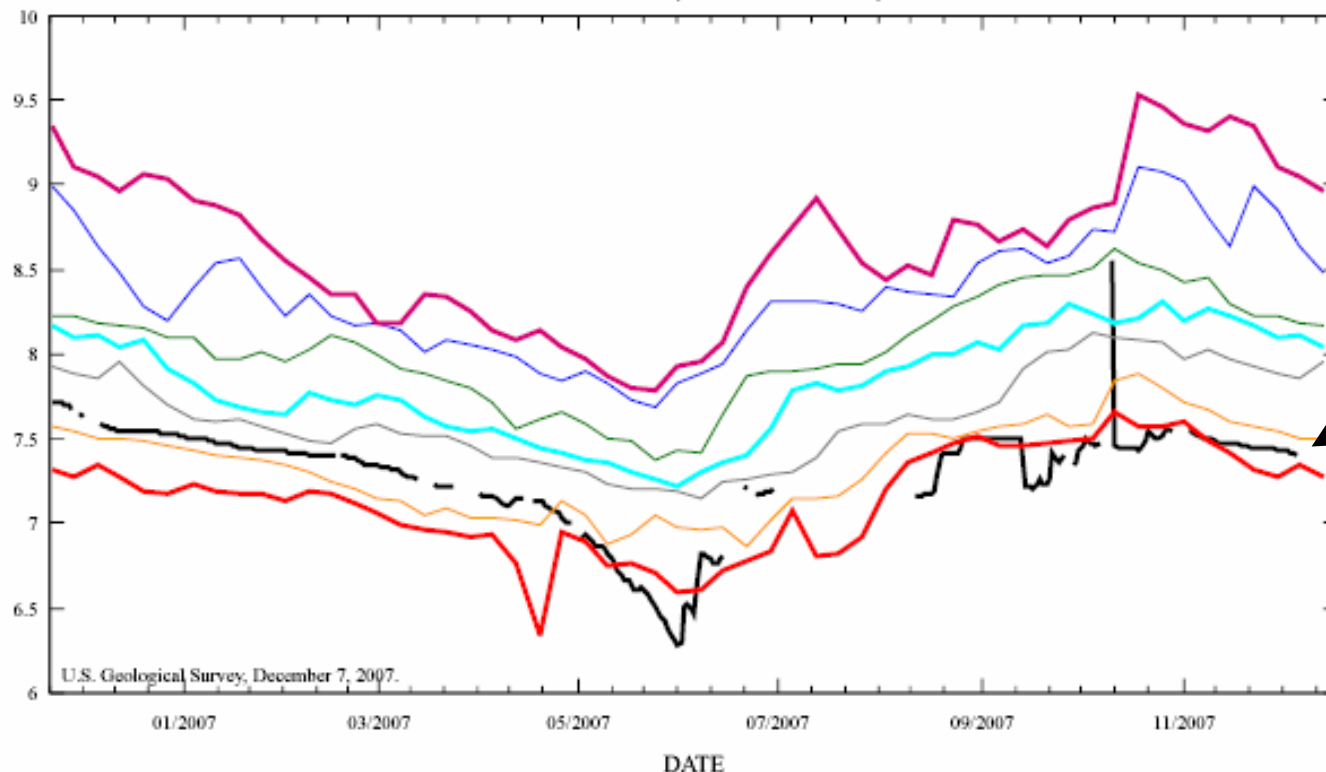


Comparison of current gage heights to historical data at SITE 76 (260037080303401)

PROVISIONAL DRAFT -- Subject to Revision.

Statistical measures are based on the last 25 years of PUBLISHED continuously-recorded data

GAGE-HEIGHT ELEVATION, IN FEET ABOVE NGVD 1929



**Median
Water Levels**

**Current
Water Levels**

- Daily mean gage height
- Median (50th percentile) of detrended daily mean gage height data
- 1st percentile of detrended daily mean gage height data
- 10th percentile of detrended daily mean gage height data
- 30th percentile of detrended daily mean gage height data
- 70th percentile of detrended daily mean gage height data
- 90th percentile of detrended daily mean gage height data
- 99th percentile of detrended daily mean gage height data

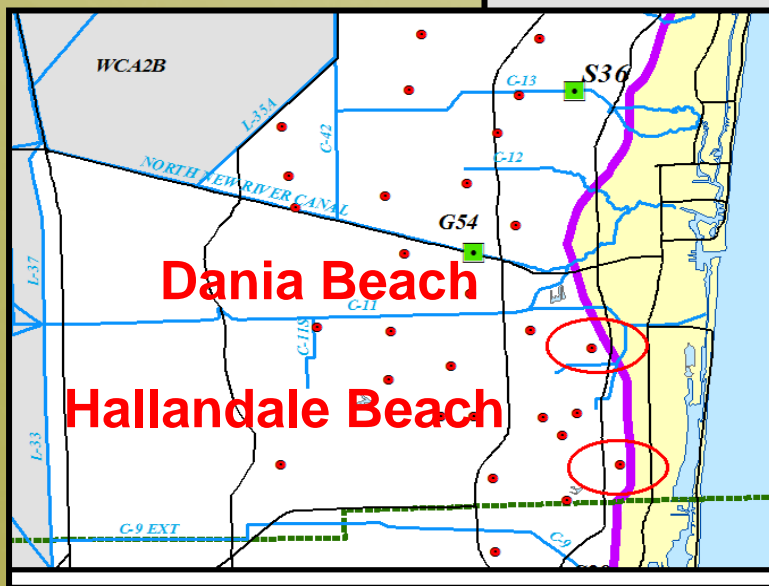
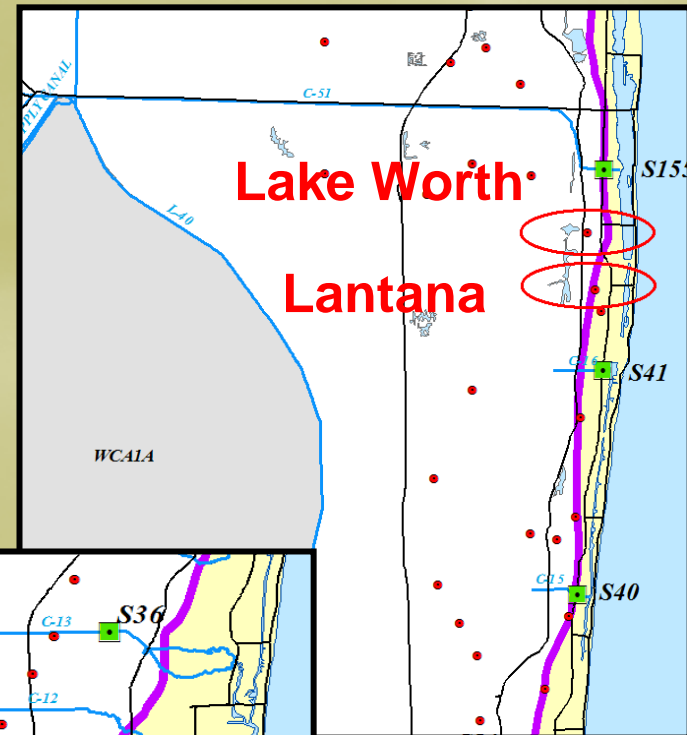
U.S. Geological Survey, December 7, 2007.

Utilities at Risk

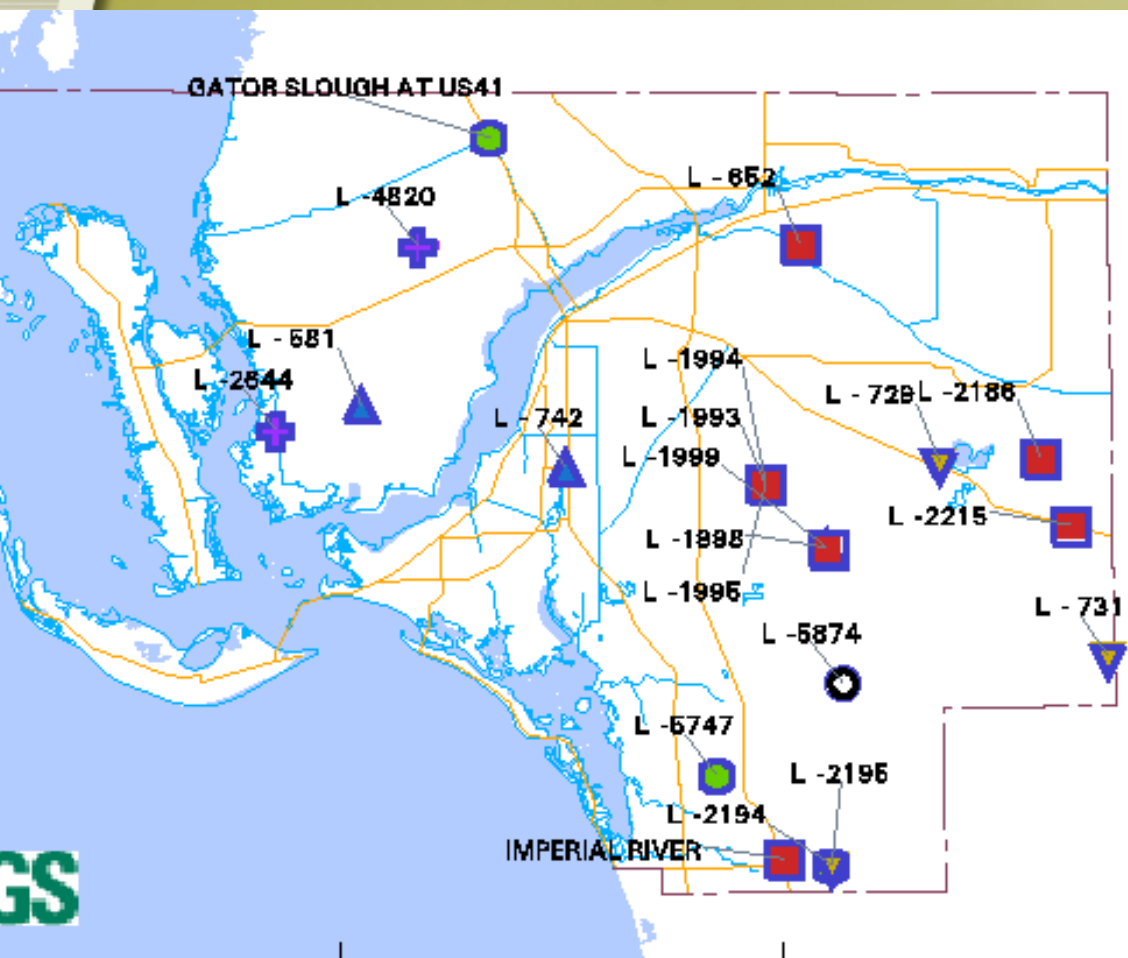
Lake Worth, Lantana, Dania, Hallandale







Saltwater intrusion still a concern for Utilities at Risk despite recent above average groundwater levels

Chloride levels have not returned to pre-drought levels



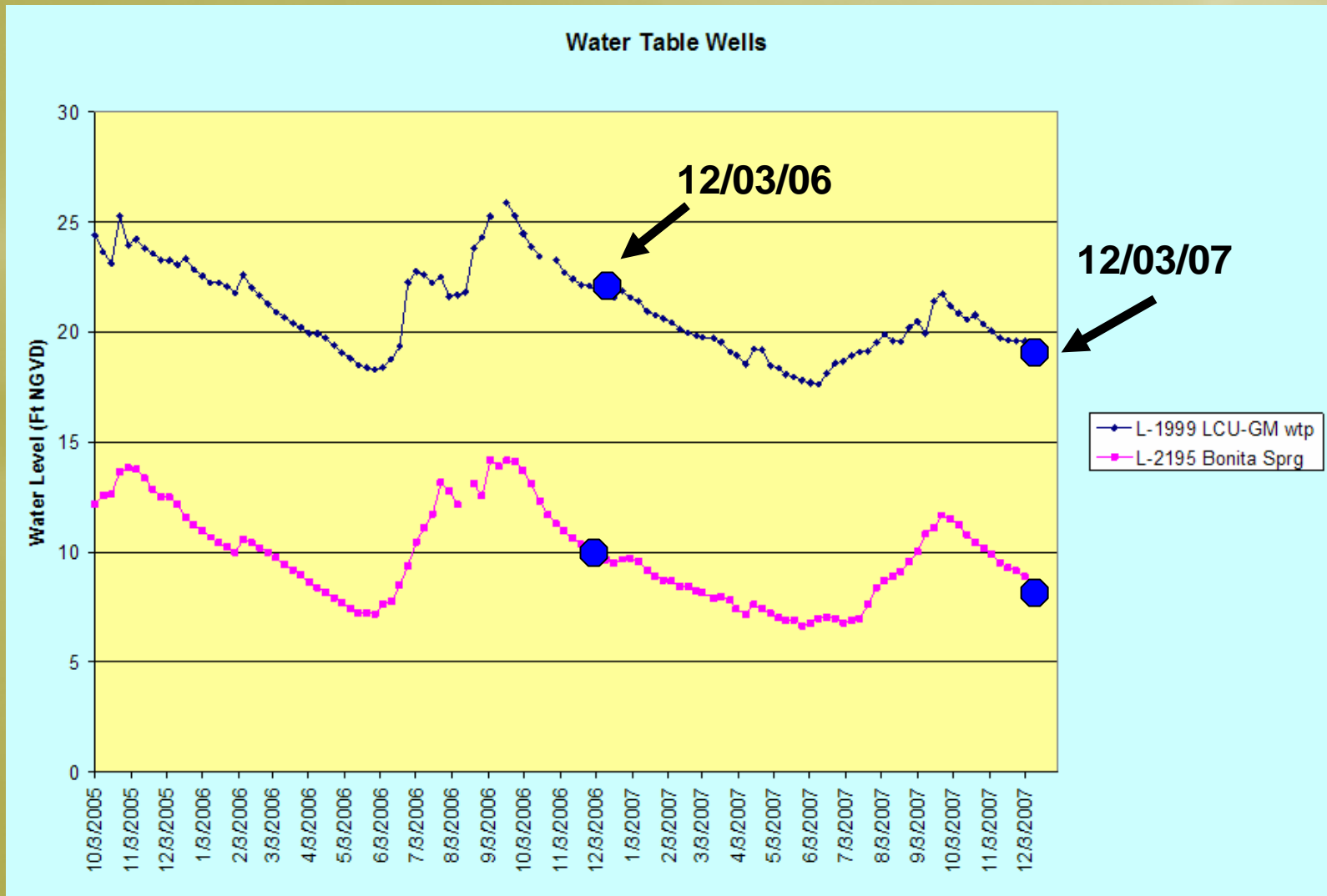
Lower West Coast Groundwater Map



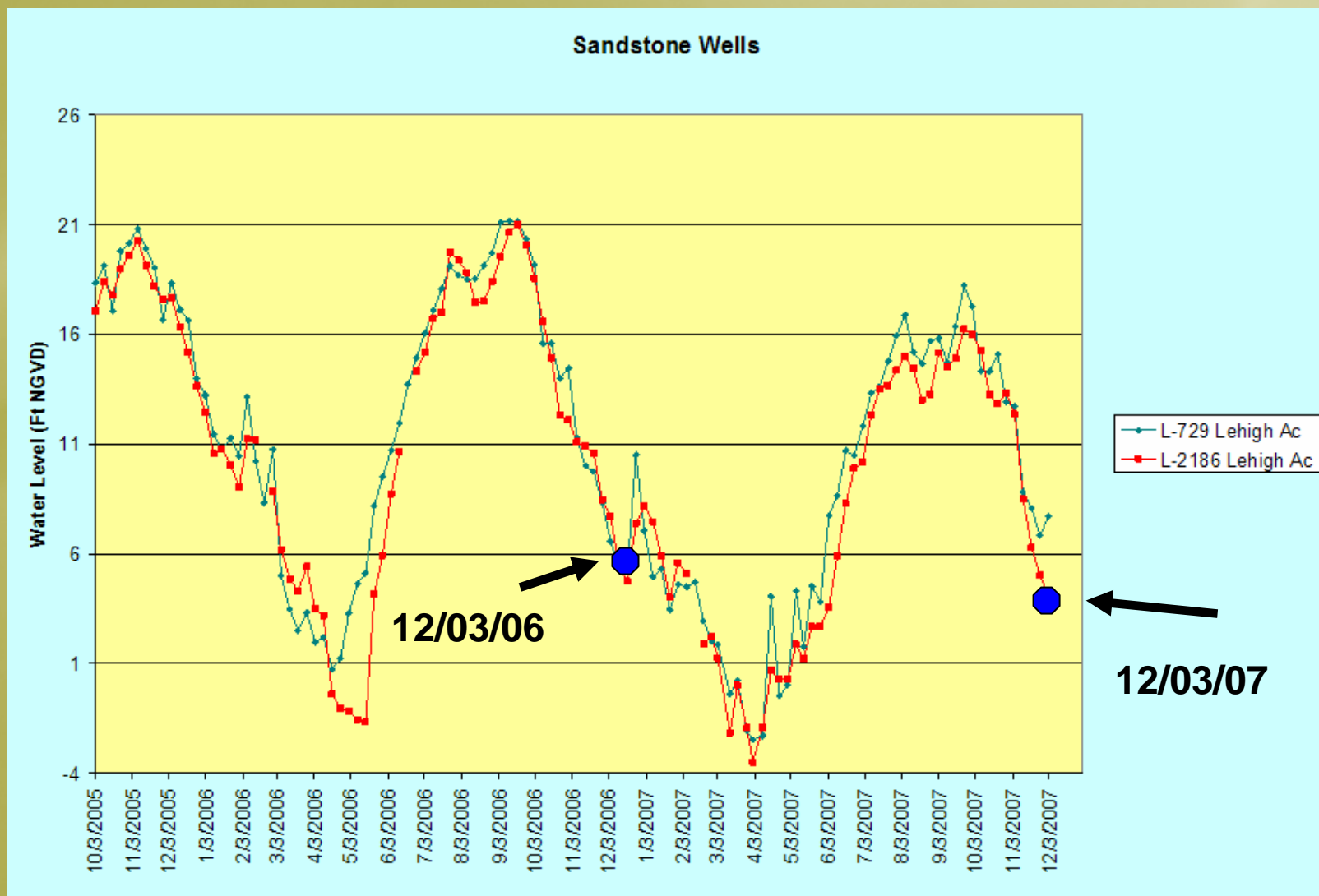
-  Insufficient data
-  Lowest 10% of past elevations
-  Lowest 10-30%
-  Within 20% of median
-  Highest 10-30%
-  Highest 10%



Hydrographs of Water Table Aquifer Wells, Lower West Coast

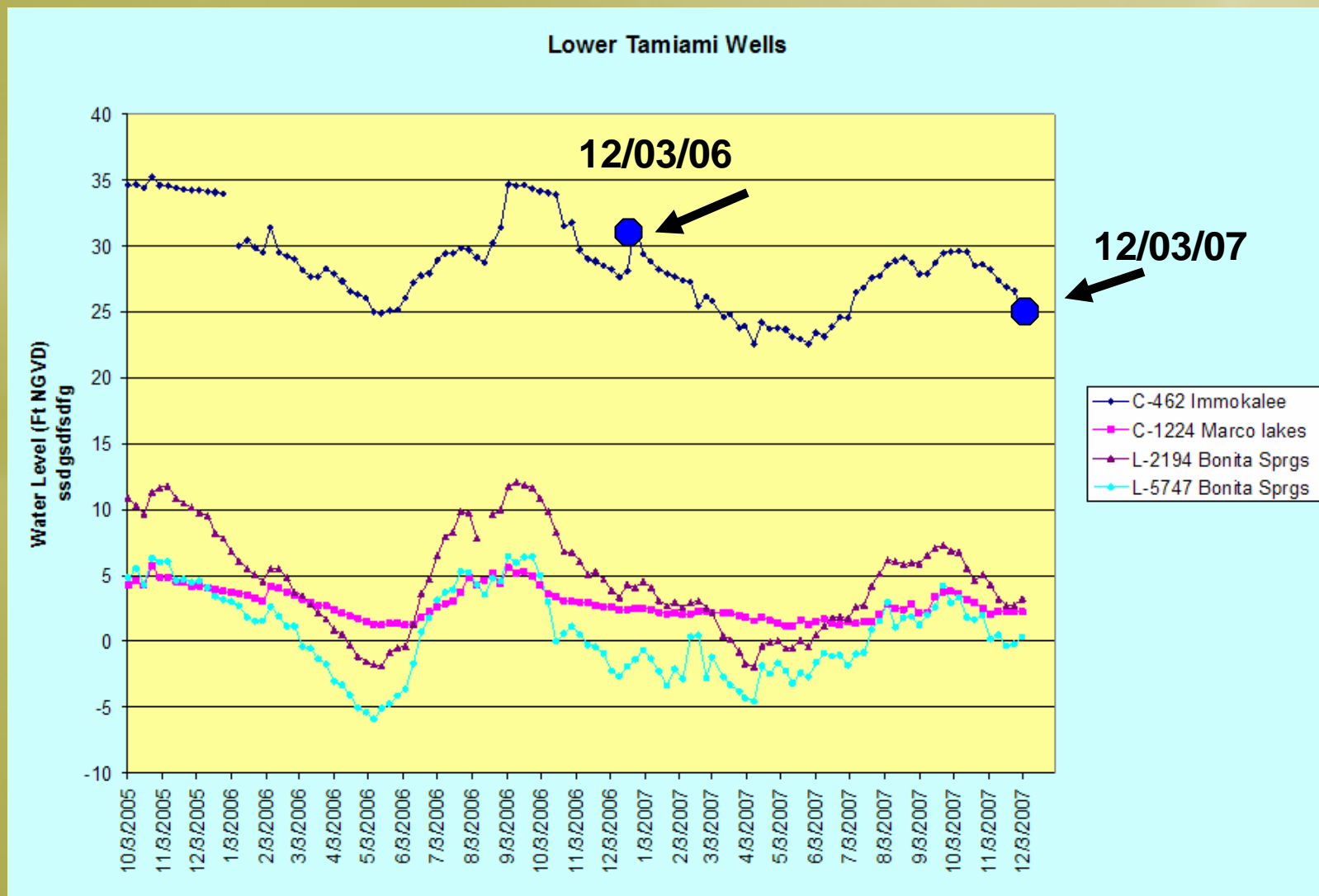


Hydrographs of Sandstone Aquifer Wells, Lehigh Acres

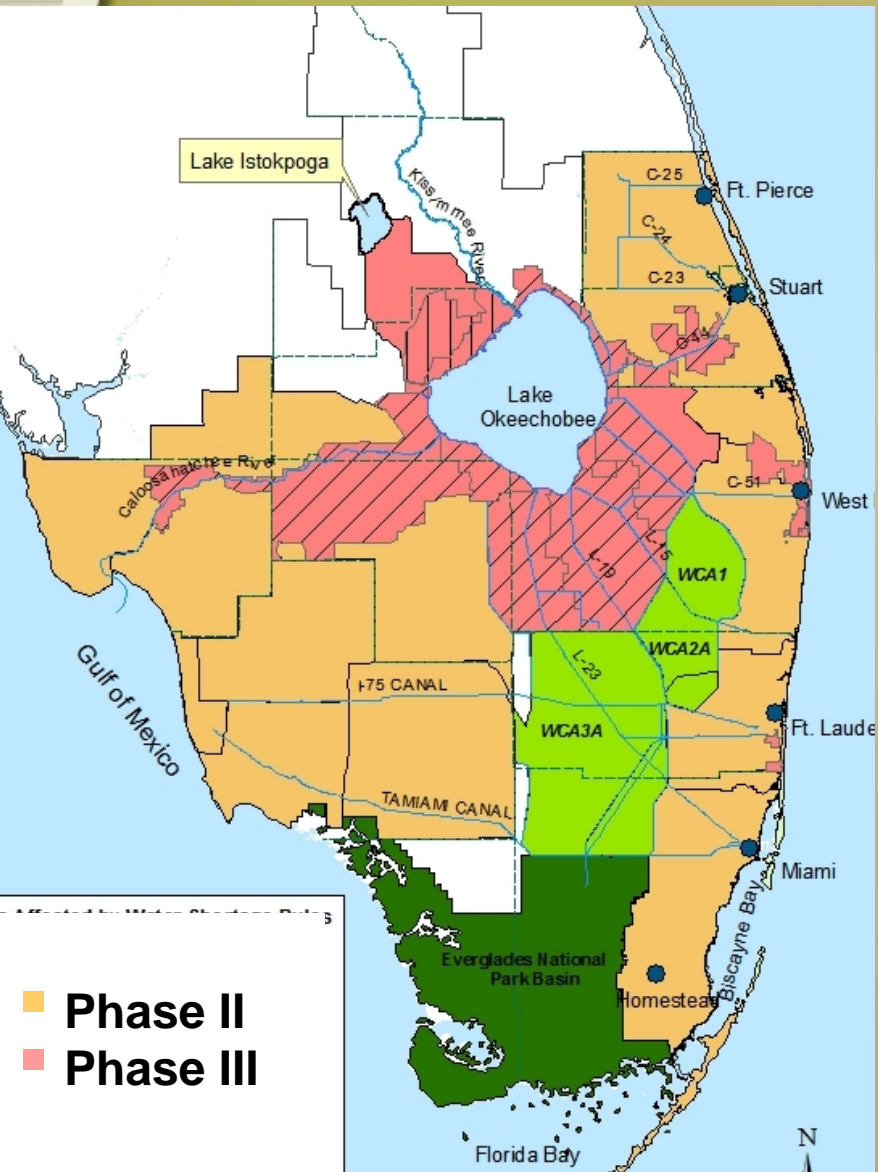




Hydrographs of Lower Tamiami Aquifer Wells, Lower West Coast



Current Water Restrictions



Phase III –

45% cutbacks in LOSA and Indian Prairie Basins

1 day per week lawn watering in “Utilities at Risk” areas

Phase II –

Lower West Coast

2 days per week lawn watering & other restrictions (car wash, pressure washing, boat wash etc.)

Modified Phase II –

Lower East Coast

Upper East Coast

2 days per week lawn watering only

Water Shortage Recommendations



- **La Nina forecast = drier-than-normal dry season conditions anticipated**
- **Implement more stringent water restrictions now to conserve water supply**
- **Expand water restrictions District-wide: include Orange, Osceola & Polk Counties**
- **Extensive messaging & public information**

“Lessons Learned” Meetings with Utilities, Nurseries, Golf Courses & other Stakeholders



- **Utility operating concerns if irrigation restrictions fall on consecutive days & hours are concentrated**
- **Need to conduct line flushing**
- **Grow-in period needed for new landscaping**
- **Some restrictions, 78° temperature, pressure washing, etc. complicate restrictions and enforcement – strategy should be to focus on landscape irrigation & other large uses**
- **Need consistency between water mgmt districts where county boundaries are split**

Water Uses Recommended for Restriction

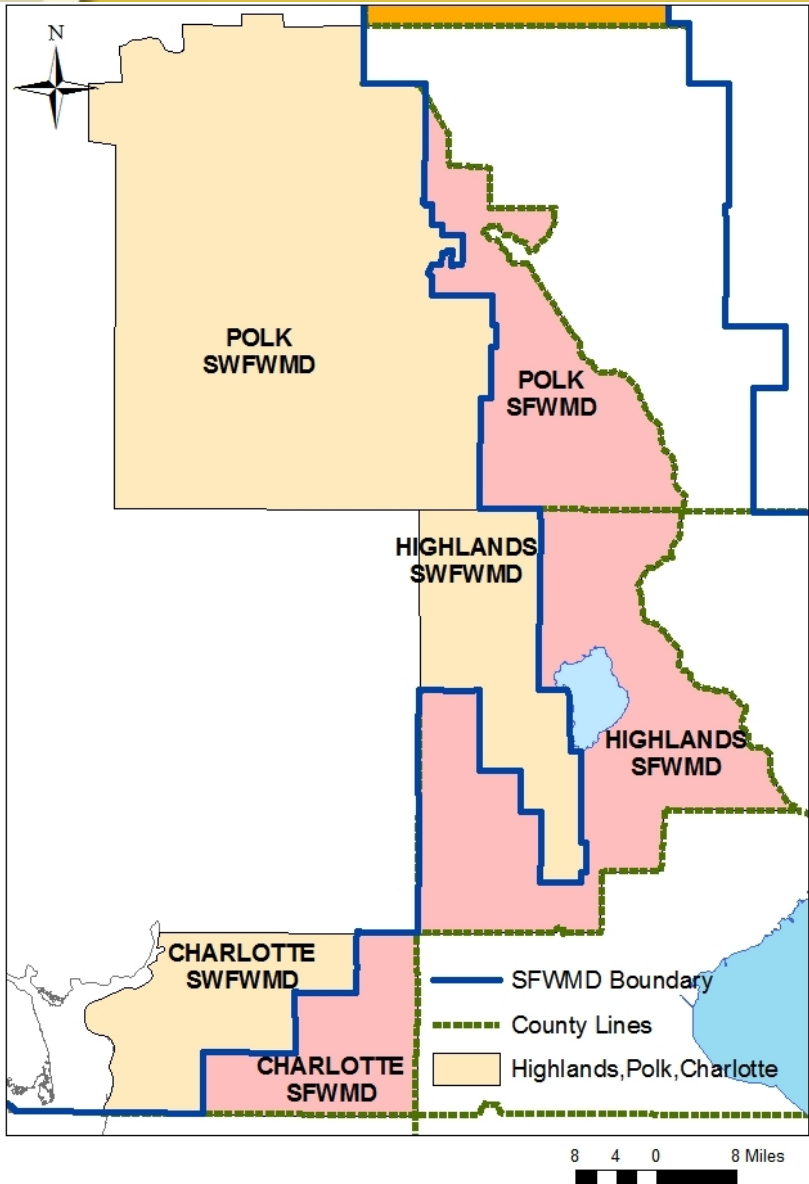


- Landscape Irrigation
- Golf Courses
- Recreation & Athletic Fields
- Nurseries
- Agriculture

For other types of water use such as car washing, air-conditioning thermostat settings, pressure-washing, etc, use strong public messaging & education *

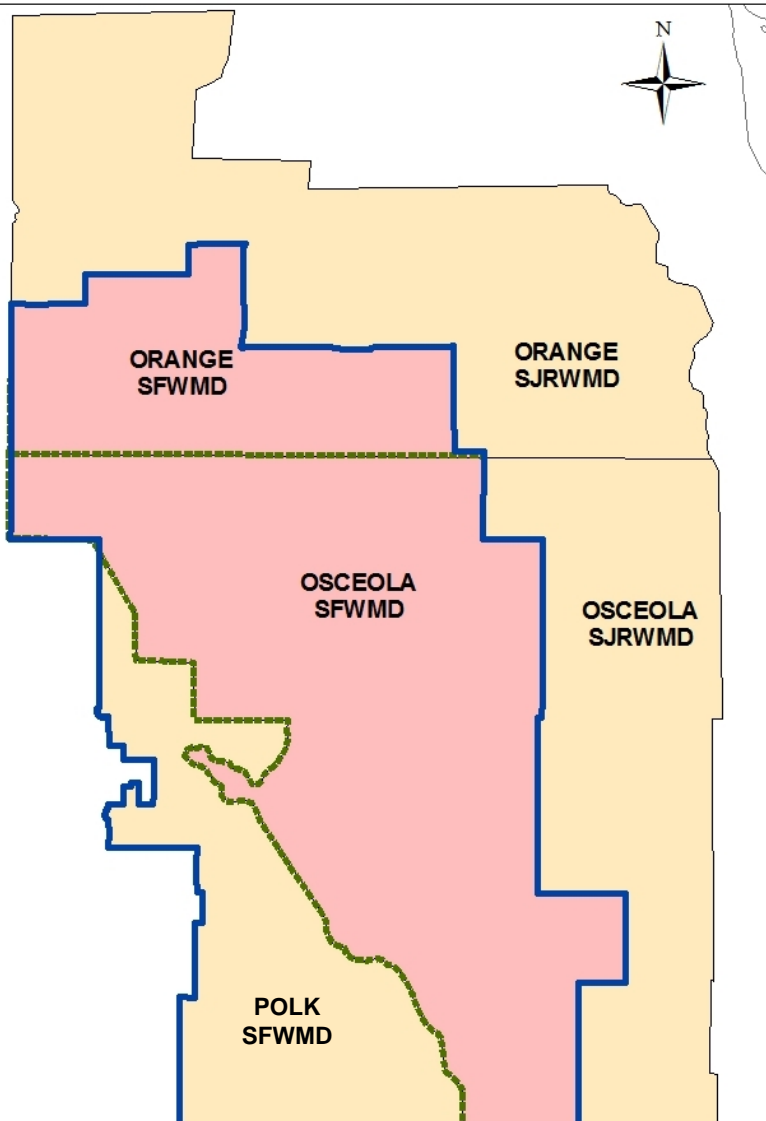
(* Can restrict in future if needed)

Polk, Highlands & Charlotte Counties



- Jurisdiction split between South Florida & Southwest Florida Water Management Districts
- For consistency, implement SWFWMD's 1 day/week landscape irrigation restriction
- Golf courses, nurseries & agriculture to follow SFWMD restrictions

Orange & Osceola Counties



Jurisdiction split between South Florida & St. Johns River Water Management Districts

For consistency, implement SJRWMD's 2 day/week landscape irrigation restriction

County & cities to update local ordinances & commit to enforcement

Golf courses, nurseries & agriculture to follow SFWMD restrictions

Landscape Irrigation Restrictions



- 1 day/week landscape irrigation
- Due to utility system constraints & to minimize variances, provide choice of watering window

Less than 5 acres: 4:00-8:00 am OR 4:00-8:00 pm

More than 5 acres: 12:00-8:00 am OR 4:00-11:59 pm

Odd addresses: Monday Even addresses: Thursday

- Alternative schedules (spread over multiple days) proposed for Lee & Collier County, but still 1 day/week irrigation

Landscape Irrigation Restrictions



- Restrictions provide for grow-in watering of new landscape installations:

0-30 and 31-60 days

(coordinated with Florida Nursery & Landscape Growers)

- Reclaimed water not restricted
- Low volume (drip, micro-jet) not restricted
- Low volume hand-watering for stress relief when needed



Utility Issues

- Irrigation days separated (Monday or Thursday) in response to utility operating system concerns
- Alternative schedule coordinated with utilities in Collier & Lee County (consistent schedules for both counties) – still 1 day/week
- Alternative schedule through variance for Cape Coral to manage reclaimed water disposal
- Encourage pressure reduction goal of 45 psi
- No restrictions on line flushing; but require signage & direct flow to pervious areas

Golf Course & Nursery Restrictions



- **Modified Phase III restrictions for nurseries District-wide**
(coordinated with Florida Nursery Growers & Landscape Assoc)
- **45% cutbacks for golf courses District-wide**
(weekly on-line reporting required)



Withdrawals from the Regional System

- No change to Lake Okeechobee Service Area or Indian Prairie Basin cutbacks
(45% cutbacks & weekly allocations)
- Water users with sources permitted from the Water Conservation Areas or Lower East Coast regional canals:

Rescind current Diversion & Impoundment Order & implement 45% cutbacks & weekly allocations

Allow capture of rainfall & movement into local storage from regional system to minimize losses to tide

Agriculture (outside LOSA / Indian Prairie)



No overhead irrigation between 10:00 a.m. – 2:00 pm (additional restrictions may be ordered as dry season continues)

WCA 3 & south Dade water levels triggers to increase restrictions in south Dade if levels decline

Canal stages trigger cutbacks for agriculture in the C-23, C24 & C-25 basins

Implementation Issues



- Notice water users & initiate public messaging & education immediately; initiate compliance & enforcement effective date January 15, 2008
- Conform Lower West Coast restrictions & recently issued permits to be consistent with Lower East Coast & Upper East Coast
- Reject requests from utilities asking for exemption from Phase III restrictions due to some % implementation of Alternative Water Supply

Staff Recommendation



Agenda Item # 57(A)(i):

Enter an Order 1) Rescinding Modified Phase II Severe Water Shortage Restrictions within the Lower West Coast (Order No. 2007-099-DAO-WS), Modified Phase II and Phase III Landscape Irrigation Restrictions within the Lower East Coast (Order No. 2007-406-DAO-WS) and Modified Phase II Landscape Irrigation Restrictions within the Upper East Coast (Order No. 2007-407-DAO-WS), 2) Modifying, as to Landscape Irrigation, Golf Course and Athletic / Recreational Area Uses, Modified Phase III Extreme Water Shortage Restrictions within the Lake Okeechobee Service Area (Order No. 2007-191-DAO-WS), and 3) Imposing Modified Phase III Water Shortage Restrictions within the boundaries of the South Florida Water Management District that are not subject to any other existing water shortage orders.

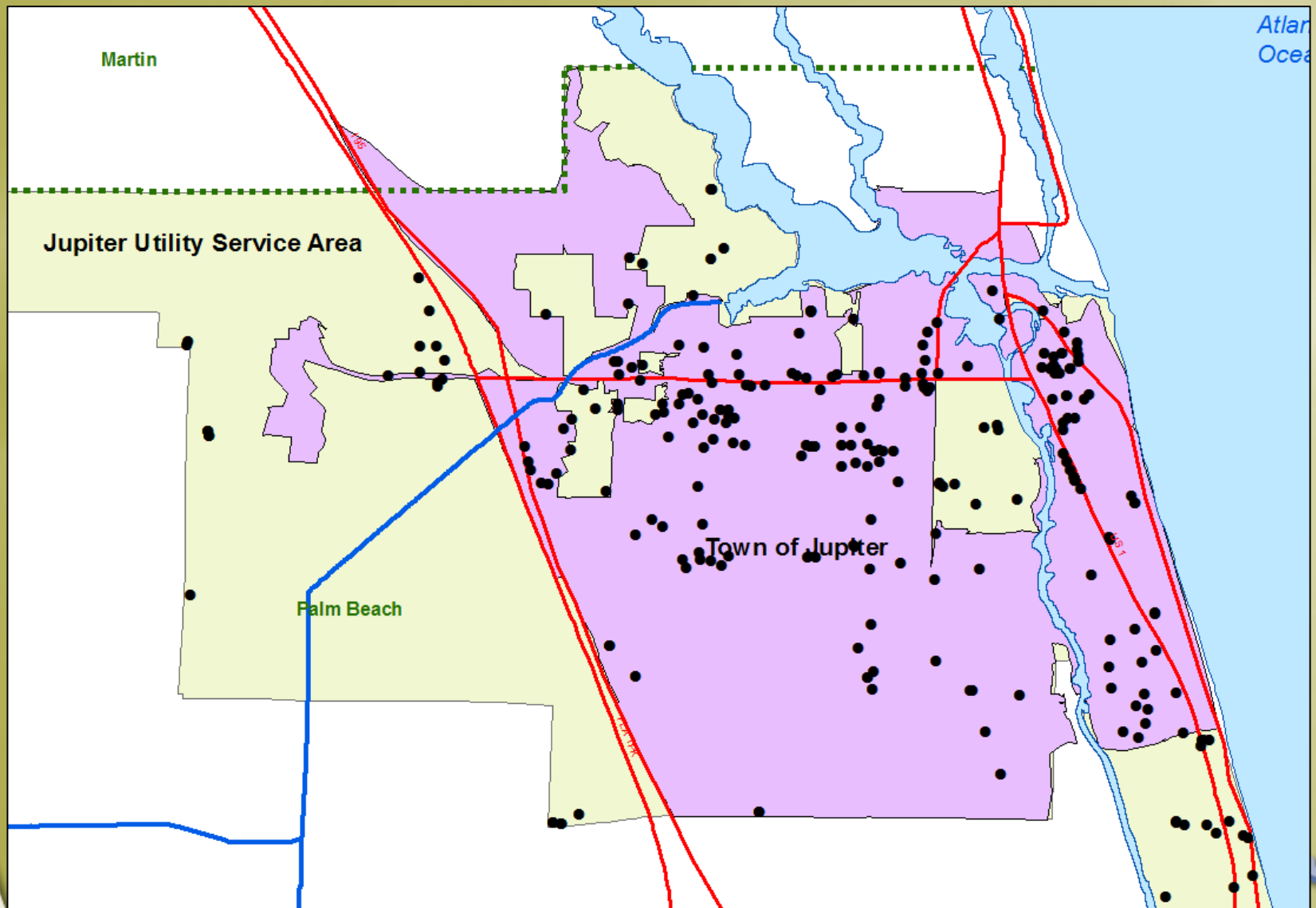
Agenda Item # 57(A)(ii):

Enter an Order 1) Rescinding Emergency Water Shortage Restrictions Affecting the Diversion and Impoundment Use Class Permittees within Specified Areas (Order Nos. 2007-054 and 2007-059-DAO-WS), and 2) Imposing Water Shortage Restrictions Affecting Specifically Identified Permittees within the Lower East Coast Region.

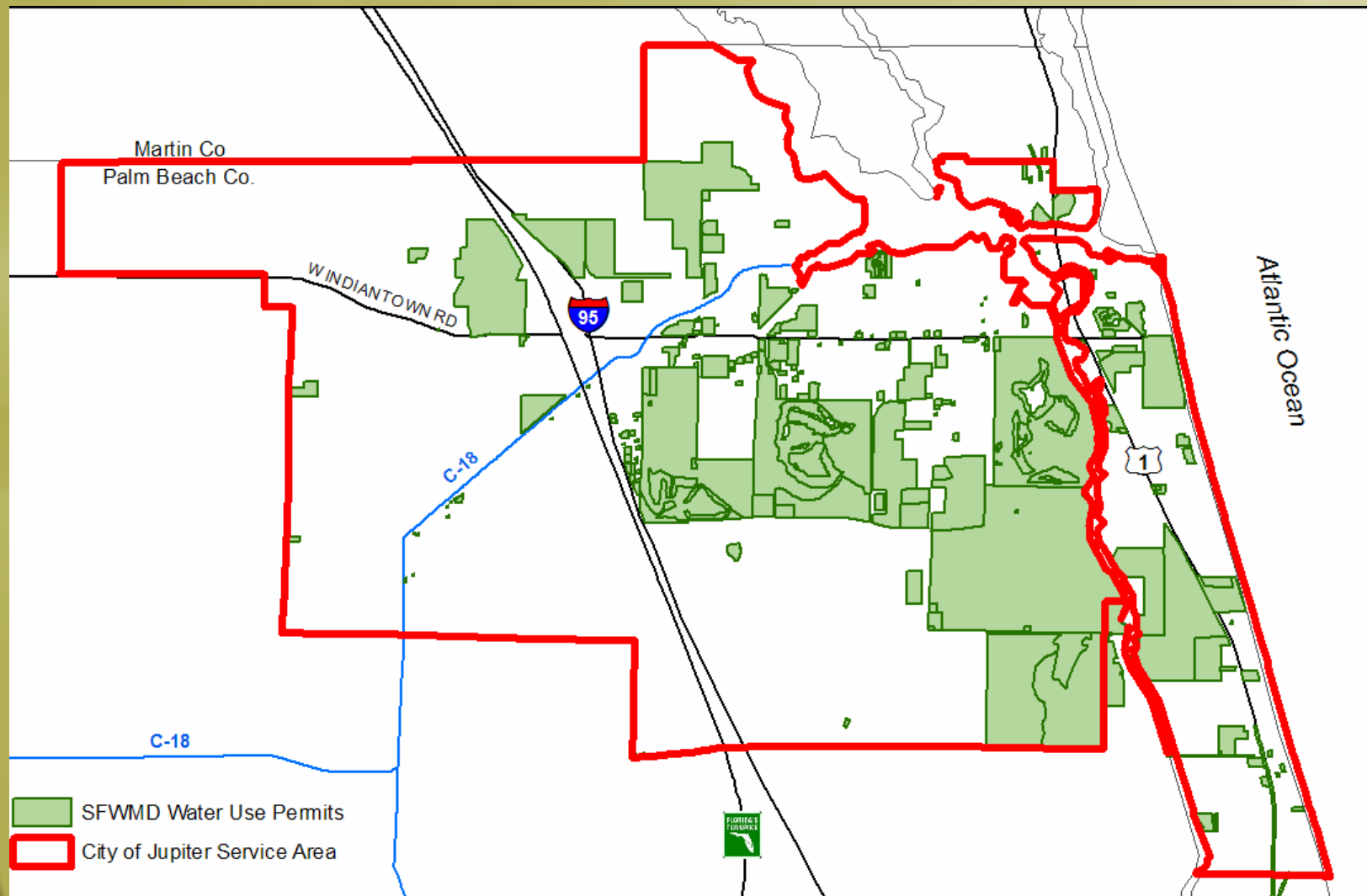


Questions ?

Town on Jupiter = 30 MGD (Surficial & Floridan)
149 other permittees using 15 MGD Surficial



Area in red = Town of Jupiter Service Area
Area in green = non-utility, permitted water users





Agenda Item # 57 B

Staff Recommendation:

Approve a resolution authorizing the transfer of \$1,000,000 in ad valorem funds from Managerial reserves to the Water Supply Program in the Water Resources Area, to support activities associated with the water shortage